CONTENTS OF VOLUME 110 · 1997

Oecologia

In Cooperation with the
International Association for Ecology (Intecol)

Editors in Chief

J.R. Ehleringer, Salt Lake City
M. Schaefer, Göttingen
E.-D. Schulze, Bayreuth
D.R. Strong, Bodega Bay

Editorial Board

F. Bairlein, Wilhelmshaven
I. Baldwin, Buffalo
F.A. Bazzaz, Cambridge
J. Blondel, Montpellier
W.J. Bond, Rondebosch
D. Bowers, Boulder
R. Brandl, Bad Lauchstädt
J.J. Burdon, Canberra
M.M. Caldwell, Logan
B. Casper, Philadelphia
P.D. Coley, Salt Lake City
M.J. Crawley, Ascot
T. Dawson, Ithaca
P.J. Den Boer, Wijster
P.R. Ehrlich, Stanford
G.D. Farquhar, Canberra
H.C.J. Godfray, Ascot
I. Hanski, Helsinki
H. Heilmeier, Tharandt
T. Hirose, Sendai
P. Högberg, Umeå
D. Hollinger, Durham
S. Jonasson, Copenhagen
P.M. Kareiva, Seattle
A. Knapp, Manhattan
C. Körner, Basel
S.L. Kohler, Champaig
O.L. Lange, Würzburg
J.H. Lawton, Ascot
S. McNaughton, Syracuse
D.B. Miles, Athens
R. Monson, Boulder
K. Nadelhoffer, Woods Hole
K. Nagy, Los Angeles
D. Neumann, Köln
R. Oren, Durham
C. Otto, Umeå
J.S. Pate, Nedland
R.W. Pearcy, Davis
C.H. Peterson, Morehead City
S.L. Pimm, Knoxville
A. Polle, Göttingen
K. Reise, List
O. Sala, Buenos Aires
B. Schmid, Zürich
J. Shykoff, Orsay
D. Simberloff, Tallahassee
M.L. Stanton, Davis
T. Tscharntke, Göttingen
S. Ulfstrand, Uppsala
M.J. Vanni, Oxford
A. Watkinson, Norwich
T.C.R. White, Adelaide
W. Wieser, Innsbruck
D.H. Wise, Lexington
V. Wolters, Giessen
H. Ziegler, München
H. Zwölfer, Bayreuth

Springer

Oecologia

Derived from *"Zeitschrift für Morphologie und Ökologie der Tiere"*, *Oecologia* was founded in 1968, volumes (1968–1982), and edited by H. Remmert. As of volume 53 (1982) the journal has been edited by both H. Remmert and E.-D. Schulze. As of volume 81 (1989) the journal has been edited by J.R. Ehleringer, Salt Lake City; C.H. Peterson, Morehead City; H. Remmert, Marburg; E.-D. Schulze, Bayreuth. As of volume 83 (1990) the journal has been edited by J.R. Ehleringer, Salt Lake City; C.H. Peterson, Morehead City; M. Schaefer, Göttingen; E.-D. Schulze, Bayreuth. As of volume 110 (1997) the journal has been edited by J.R. Ehleringer, Salt Lake City; M. Schaefer, Göttingen; E.-D. Schulze, Bayreuth; D.R. Strong, Bodega Bay.

Copyright

Submission of a manuscript implies: that the work described has not been published before (except in the form of an abstract or as part of a published lecture, review, or thesis); that it is not under consideration for publication elsewhere; that its publication has been approved by all coauthors, if any, as well as by the responsible authorities at the institute where the work has been carried out; that, if and when the manuscript is accepted for publication, the authors agree to automatic transfer of the copyright to the publisher; and that the manuscript will not be published elsewhere in any language without the consent of the copyright holders.

All articles published in this journal are protected by copyright, which covers the exclusive rights to reproduce and distribute the article (e.g., as offprints), all translation rights as well as the rights to publish the article in any electronic form. No material published in this journal may be reproduced photographically or stored on microfilm, in electronic data bases, video disks, etc., without first obtaining written permission from the publisher.

The Canada Institute for Scientific and Technical Information (CISTI) provides a comprehensive, world-wide document delivery service for all Springer-Verlag journals. For more information, or to place an order for a copyright-cleared Springer-Verlag document, please contact Client Assistant, Document Delivery, Canada Institute for Scientific and Technical Information, Ottawa K1A OS2, Canada (Tel: 613-993-9251; FAX: 613-952-8243; e-mail: cisti.docdel@nrc.-ca).

The use of general descriptive names, trade names, trademarks, etc., in this publication, even if not specifically identified, does not imply that these names are not protected by the relevant laws and regulations.

While the advice and information in this journal is believed to be true and accurate at the date of its going to press, neither the authors, the editors, nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Special regulations for photocopies in the USA: Photocopies may be made for personal or in-house use beyond the limitations stipulated under Section 107 or 108 of U.S. Copyright Law, provided a fee is paid. All fees should be paid to the Copyright Clearance Center, Inc., 21 Congress Street, Salem, MA 01970, USA, stating the ISSN 0029-8549, the volume, and the first and last page numbers of each article copied. The copyright owner's consent does not include copying for general distribution, promotion, new works, or resale. In these cases, specific written permission must first be obtained from the publisher.

This journal is included in the Springer Journals Preview Service, i.e. the tables of contents and BiblioAbstracts are available via Internet before the new issue reaches the subscribers. Tables of contents are free of charge; BiblioAbstracts are available for a small annual fee. Details can be obtained by sending an e-mail message containing the line help to svjps@springer.de.

Printers:

Universitätsdruckerei H. Stürtz AG, Würzburg

© Springer-Verlag Berlin Heidelberg 1997

Springer-Verlag GmbH & Co. KG, D-14197 Berlin, Germany

Printed in Germany

Springer

Contents

Aaltonen H → Alm J
Adams D, Douglas AE: How symbiotic bacteria influence plant utilisation by the polyphagous aphid, *Aphis fabae* 528
Alm J, Talanov A, Saarnio S, Silvola J, Ikkonen E, Aaltonen H, Nykänen H, Martikainen PJ: Reconstruction of the carbon balance for microsites in a boreal oligotrophic pine fen, Finland 423
Alm J → Saarnio S
Arnone III JA → Hirschel G
Auge H, Brandl R: Seedling recruitment in the invasive clonal shrub, *Mahonia aquifolium* Pursh (Nutt.) 205

Barigah TS → Buchmann N
Barnes JD → Fordham M
Berger U → Samietz J
Bettarini I → Fordham M
Blaustein L: Non-consumptive effects of larval *Salamandra* on crustacean prey: can eggs detect predators? 212
Blomqvist D, Johansson OC, Götmark F: Parental quality and egg size affect chick survival in a precocial bird, the lapwing *Vanellus vanellus* 18
Boose DL: Sources of variation in floral nectar production rate in *Epilobium canum* (Onagraceae): implications for natural selection 493
Bradshaw WE → Wegis MC
Brandl R → Auge H
Briske DD → Hendrickson JR
Brito M → Neill C
Brix H → Madsen TV
Brodribb T, Hill RS: Light response characteristics of a morphologically diverse group of southern hemisphere conifers as measured by chlorophyll fluorescence 10
Brody AK, Mitchell RJ: Effects of experimental manipulation of inflorescence size on pollination and pre-dispersal seed predation in the hummingbird-pollinated plant *Ipomopsis aggregata* 86
Brooks JR, Flanagan LB, Buchmann N, Ehleringer JR: Carbon isotope composition of boreal plants: functional grouping of life forms 301
Brooks PD, Schmidt SK, Williams MW: Winter production of CO_2 and N_2O from alpine tundra: environmental controls and relationship to inter-system C and N fluxes 403
Bryant JP → Rossow LJ
Buchmann N, Guehl J-M, Barigah TS, Ehleringer JR: Interseasonal comparison of CO_2 concentrations, isotopic composition, and carbon dynamics in an Amazonian rainforest (French Guiana) 120
Buchmann N, Kao W-Y, Ehleringer J: Influence of stand structure on carbon-13 of vegetation, soils, and canopy air within deciduous and evergreen forests in Utah, United States 109
Buchmann N → Brooks JR
Burke IC → Vinton MA

Cappuccino N, Martin M-A: The birch tube-maker *Acrobasis betulella* in a fragmented habitat: the importance of patch isolation and edges 69
Carrière Y, Masaki S, Roff DA: The coadaptation of female morphology and offspring size: a comparative analysis in crickets 197
Cerri CC → Neill C
Chamberlain CP → Connin SL
Cleuvers M, Goser B, Ratte H-T: Life-strategy shift by intraspecific interaction in *Daphnia magna*: change in reproduction from quantity to quality 337
Clobert J → Gignoux J
Cochard H → Ewers FW
Connin SL, Virginia RA, Chamberlain CP: Carbon isotopes reveal soil organic matter dynamics following arid land shrub expansion 374
Crawford MK → Irlandi EA
Cuervo JJ → Saino N

Daehler CC, Strong DR: Reduced herbivore resistance in introduced smooth cordgrass (*Spartina alterniflora*) after a century of herbivore-free growth 99
Dang QL → Patterson TB
Davey MC: Effects of continuous and repeated dehydration on carbon fixation by bryophytes from the maritime Antarctic 25
David JS → David TS
David TS, Ferreira MI, David JS, Pereira JS: Transpiration from a mature *Eucalyptus globulus* plantation in Portugal during a spring-summer period of progressively higher water deficit 153
Davison TE → Wegis MC
Demment MW → Ginnett TM
Dirzo R → Morón-Ríos A
Donohue K: Seed dispersal in *Cakile edentula* var. *lacustris*: decoupling the fitness effects of density and distance from the home site 520
Doughty P, Shine R: Detecting life-history trade-offs: measuring energy stores in "capital" breeders reveals costs of reproduction 508
Douglas AE → Adams D

Ehleringer J → Buchmann N
Ehleringer JR → Brooks JR
Ehleringer JR → Buchmann N
Ewers FW, Cochard H, Tyree MT: A survey of root pressures in vines of a tropical lowland forest 191

Ferreira MI → David TS
Flanagan LB → Brooks JR
Folstad I → Markusson E
Forbes MR → Leung B
Fordham M, Barnes JD, Bettarini I, Polle A, Slee N, Raines C, Miglietta F, Raschi A: The impact of elevated CO_2 on growth and photosynthesis in *Agrostis canina* L. ssp. *monteluccii* adapted to contrasting atmospheric CO_2 concentrations 169
Fritz RS, McDonough SE, Rhoads AG: Effects of plant hybridization on herbivore-parasitoid interactions 360

Gamradt SC, Kats LB: Impact of chaparral wildfire-induced sedimentation on oviposition of stream-breeding California newts (*Taricha torosa*) 546
Ganger MT: The influence of pollen addition and ramet isolation on current sexual reproduction in a clonal herb 231
Gignoux J, Clobert J, Menaut J-C: Alternative fire resistance strategies in savanna trees 576
Ginnett TM, Demment MW: Sex differences in giraffe foraging behavior at two spatial scales 291
Godfray HCJ → Mayhew PJ
Goser B → Cleuvers M
Götmark F → Blomqvist D
Granström A → Nystrand O
Grevstad FS, Herzig AL: Quantifying the effects of distance and conspecifics on colonization: experiments and models using the loosestrife leaf beetle, *Galerucella calmariensis* 60
Guehl J-M → Buchmann N
Guy RD → Patterson TB

Hanba YT, Mori S, Lei TT, Koike T, Wada E: Variations in leaf $\delta^{13}C$ along a vertical profile of irradiance in a temperate Japanese forest 253
Heimpel GE, Rosenheim JA, Mangel M: Predation on adult *Aphytis* parasitoids in the field 346
Hendrickson JR, Briske DD: Axillary bud banks of two semiarid perennial grasses: occurrence, longevity, and contribution to population persistence 584
Herzig AL → Grevstad FS
Hill RS → Brodribb T
Hirschel G, Körner Ch, Arnone III JA: Will rising atmospheric CO_2 affect leaf litter quality and in situ decomposition rates in native plant communities? 387
Hodgson JR → Schindler DE
Hofer R → Nagl AM
Holzapfel CM → Wegis MC
Hubbard JA, McPherson GR: Acorn selection by Mexican jays: a test of tri-trophic symbiotic relationship hypothesis 143
Huber H, Stuefer JF: Shade-induced changes in the branching pattern of a stoloniferous herb: functional response or allometric effect? 478
Huston MA: Hidden treatments in ecological experiments: re-evaluating the ecosystem function of biodiversity 449

Ikkonen E → Alm J
Inoue T → Nagamitsu T
Irlandi EA, Crawford MK: Habitat linkages: the effect of intertidal saltmarshes and adjacent subtidal habitats on abundance, movement, and growth of an estuarine fish 222

Janssen A → Pallini A
Jaramillo VJ → Morón-Ríos A
Johansson OC → Blomqvist D

Kao W-Y → Buchmann N
Kats LB → Gamradt SC
Kielland K → Rossow LJ
Kitchell JF → Schindler DE
Knops JMH, Koenig WD, Nash III TH: On the relationship between nutrient use efficiency and fertility in forest ecosystems 550
Koenig WD → Knops JMH

Koike T → Hanba YT
Körner Ch → Hirschel G
Krishnapilay B → Lee DW
Krivacek M → Saino N
Kubiske ME, Pregitzer KS, Mikan CJ, Zak DR, Maziasz JL, Teeri JA: *Populus tremuloides* photosynthesis and crown architecture in response to elevated CO_2 and soil N availability 328
Kwak TJ, Zedler JB: Food web analysis of southern California coastal wetlands using multiple stable isotopes 262

Lee DW, Oberbauer SF, Krishnapilay B, Mansor M, Mohamad H, Yap SK: Effects of irradiance and spectral quality on seedling development of two Southeast Asian *Hopea* species 1
Lei TT → Hanba YT
Leibold MA: Do nutrient-competition models predict nutrient availabilities in limnetic ecosystems? 132
Leung B, Forbes MR: Fluctuating asymmetry in relation to indices of quality and fitness in the damselfly, *Enallagma ebrium* (Hagen) 472
Lohila A → Saarnio S
Lope F de → Saino N

Madsen TV, Brix H: Growth, photosynthesis and acclimation by two submerged macrophytes in relation to temperature 320
Mangel M → Heimpel GE
Mansor M → Lee DW
Markusson E, Folstad I: Reindeer antlers: visual indicators of individual quality? 501
Maron JL: Interspecific competition and insect herbivory reduce bush lupine (*Lupinus arboreus*) seedling survival 284
Martikainen PJ → Alm J
Martikainen PJ → Saarnio S
Martin M-A → Cappuccino N
Masaki S → Carrière Y
Matter SF: Population density and area: the role of between- and within-patch processes 533
Matthews MA → Schultz HR
Mayhew PJ, Godfray HCJ: Mixed sex allocation strategies in a parasitoid wasp 218
Maziasz JL → Kubiske ME
McDonough SE → Fritz RS
McPherson GR → Hubbard JA
Melillo JM → Neill C
Menaut J-C → Gignoux J
Miglietta F → Fordham M
Mikan CJ → Kubiske ME
Mitchell RJ → Brody AK
Mohamad H → Lee DW
Mori S → Hanba YT
Morón-Ríos A, Dirzo R, Jaramillo VJ: Defoliation and below-ground herbivory in the grass *Muhlenbergia quadridentata*: Effects on plant performance and on the root-feeder *Phyllophaga* sp. (Coleoptera, Melolonthidae) 237
Møller AP → Saino N

Nagamitsu T, Inoue T: Aggressive foraging of social bees as a mechanism of floral resource partitioning in an Asian tropical rainforest 432
Nagl AM, Hofer R: Effects of ultraviolet radiation on early larval stages of the Alpine newt, *Triturus alpestris*, under natural and laboratory conditions 514
Nams VO: Density-dependent predation by skunks using olfactory search images 440
Nash III TH → Knops JMH
Näsholm T → Nordin A
Neill C, Piccolo MC, Cerri CC, Steudler PA, Melillo JM, Brito M: Net nitrogen mineralization and net nitrification rates in soils following deforestation for pasture across the southwestern Brazilian Amazon Basin landscape 243
Nordin A, Näsholm T: Nitrogen storage forms in nine boreal understorey plant species 487
Nykänen H → Alm J
Nykänen H → Saarnio S
Nystrand O, Granström A: Post-dispersal predation on *Pinus sylvestris* seeds by *Fringilla* spp: ground substrate affects selection for seed color 353

Oberbauer SF → Lee DW

Pallini A, Janssen A, Sabelis MW: Odour-mediated responses of phytophagous mites to conspecific and heterospecific competitors 179
Parsons KE: Role of dispersal ability in the phenotypic differentiation and plasticity of two marine gastropods. I. Shape 461
Patterson TB, Guy RD, Dang QL: Whole-plant nitrogen- and water-relations traits, and their associated trade-offs, in adjacent muskeg and upland boreal spruce species 160
Peckarsky BL → Vance SA
Pereira JS → David TS
Piccolo MC → Neill C
Polle A → Fordham M
Poulin R, Rohde K: Comparing the richness of metazoan ectoparasite communities of marine fishes: controlling for host phylogeny 278
Pregitzer KS → Kubiske ME

Raines C → Fordham M
Raschi A → Fordham M
Ratte H-T → Cleuvers M
Rhoads AG → Fritz RS
Roff DA → Carrière Y
Rohde K → Poulin R
Rosenheim JA → Heimpel GE
Rossow LJ, Bryant JP, Kielland K: Effects of above-ground browsing by mammals on mycorrhizal infection in an early successional taiga ecosystem 94

Saarnio S, Alm J, Silvola J, Lohila A, Nykänen H, Martikainen PJ: Seasonal variation in CH_4 emissions and production and oxidation potentials at microsites on an oligotrophic pine fen 414
Saarnio S → Alm J
Sabelis MW → Pallini A
Saino N, Cuervo JJ, Krivacek M, Lope F de, Møller AP: Experimental manipulation of tail ornament size affects the hematocrit of male barn swallows (*Hirundo rustica*) 186
Samietz J, Berger U: Evaluation of movement parameters in insects – bias and robustness with regard to resight numbers 40
Sandercock BK: Incubation capacity and clutch size determination in two calidrine sandpipers: a test of the four-egg threshold 50
Schindler DE, Hodgson JR, Kitchell JF: Density-dependent changes in individual foraging specialization of largemouth bass 592
Schmidt SK → Brooks PD
Schneider DW: Predation and food web structure along a habitat duration gradient 567
Schultz HR, Matthews MA: High vapour pressure deficit exacerbates xylem cavitation and photoinhibition in shade-grown *Piper auritum* H.B. & K. during prolonged sunflecks. I. Dynamics of plant water relations 312
Shine R → Doughty P
Silvola J → Alm J
Silvola J → Saarnio S
Slee N → Fordham M
Sperens U: Fruit production in *Sorbus aucuparia* L. (Rosaceae) and pre-dispersal seed predation by the apple fruit moth (*Argyresthia conjugella* Zell.) 368
Stange G: Effects of changes in atmospheric carbon dioxide on the location of hosts by the moth, *Cactoblastis cactorum* 539
Steudler PA → Neill C
Strauss SY: Lack of evidence for local adaptation to individual plant clones or site by a mobile specialist herbivore 77
Strong DR → Daehler CC
Stuefer JF → Huber H

Talanov A → Alm J
Taylor CM: Fish species richness and incidence patterns in isolated and connected stream pools: effects of pool volume and spatial position 560
Teeri JA → Kubiske ME
Tyree MT → Ewers FW

Vance SA, Peckarsky BL: The effect of mermithid parasitism on predation of nymphal *Baetis bicaudatus* (Ephemeroptera) by invertebrates 147
Vinton MA, Burke IC: Contingent effects of plant species on soils along a regional moisture gradient in the Great Plains 393
Virginia RA → Connin SL
Vitousek PM: On regression and residuals: response to Knops et al. 557

Wada E → Hanba YT
Wegis MC, Bradshaw WE, Davison TE, Holzapfel CM: Rhythmic components of photoperiodic time measurement in the pitcher-plant mosquito, *Wyeomyia smithii* 32
Williams MW → Brooks PD

Yap SK → Lee DW

Zak DR → Kubiske ME
Zedler JB → Kwak TJ

Indexed in *Current Contents*